

1 NOVEMBER 1997



Acquisition

**AIRCRAFT STRUCTURAL INTEGRITY
PROGRAM**

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

NOTICE: This publication is available digitally on the SAF/AAD WWW site at: <http://afpubs.hq.af.mil>. If you lack access, contact your Publishing Distribution Office (PDO).

OPR: SAF/AQRE (Mr. Calvin H. Garner)
Supersedes AFI 63-1001, 29 June 1994.

Certified by: SAF/AQR (Dr. Helmut Hellwig)
Pages: 5
Distribution: F

This instruction defines the responsibilities and procedures followed by appropriate organizations in implementing and sustaining the Aircraft Structural Integrity Program (ASIP). It implements AFD 63-10, *Aircraft Structural Integrity*, and is consistent with DoD Directive 5000.1, *Defense Acquisition, March 15, 1996*, and DoD Regulation 5000.2, *Mandatory Procedures for Major Defense Acquisition Programs (MDAPs) and Major Automated Information System (MAIS) Acquisition Programs, March 15, 1996*.

SUMMARY OF REVISIONS

This revision includes references to new performance-based documents (i.e., MIL-HDBK-1530 and JSGS-87221B) (paragraphs 2, 2.1, 3.1, 4.1, 4.2, 4.3 and 5.2) in place of MIL-STD-1530 which has been superseded; uses new acquisition phase terminology (i.e. "Program Definition" and "Risk Reduction") (paragraph 4.1); deletes the requirement for formal submission of the ASIP Master Plan (paragraph 3.4, 3.5, 4.1, 4.4, 5.3, 5.4); incorporates ASIP planning events into the Integrated Management Plan and Integrated Management Schedule of new or updated weapon system programs (paragraph 3); removes the requirement to document deviations from ASIP requirements (paragraph 3.4); removes mandatory direction for inclusion of ASIP requirements in procurement documentation (paragraph 4.1); and incorporates changes due to reorganization (i.e., SAF/AQR in place of SAF/AQP) (paragraph 4.1). An asterisk (*) indicates revision from the previous edition.

1. Objectives of ASIP:

- 1.1. Establish, evaluate, and substantiate the structural integrity (airframe strength, rigidity, damage tolerance, and durability, including economic life) of aircraft structures.

- 1.2. Acquire, evaluate, and apply operational usage data to provide a continual update of the structural integrity of operational aircraft.
- 1.3. Provide quantitative information for decisions on force structure planning, inspection and modification priorities, and related operational and support decisions.
- 1.4. Provide a basis for improving structural criteria and methods of design, evaluation, and substantiation for future aircraft systems and modifications.

2. ASIP Requirements: The technical details for ASIP are in MIL-HDBK-1530, *General Guidelines For Aircraft Structural Integrity Program*, and JSGS-87221B, *General Specification and Handbook for Aircraft Structures*.

2.1. ASIP, as described in MIL-HDBK-1530, is tailored as appropriate for application to all piloted aircraft developed by the Air Force. It also applies to aircraft intended for operation as unmanned air vehicles, but capable of carrying safety pilots. For unpiloted vehicles, apply those elements needed to ensure sufficient structural safety and durability to meet the intended use of the airframe.

2.2. Apply ASIP as necessary to ensure structural safety and determine the economic life for the following:

- Current operational aircraft.
- Aircraft used, but not originally developed by the Air Force.
- Air Force aircraft modified for (or directed to) new missions.

2.3. Apply ASIP as needed to provide flight safety during prototype evaluation. Apply the program to any follow-on aircraft developed by the Air Force and account for it in the prototype evaluation.

3. ASIP Planning. ASIP will be incorporated into the Integrated Management Plan and Integrated Management Schedule of new or updated weapon system programs and will:

3.1. Incorporate the requirements of this instruction, MIL-HDBK-1530, and other appropriate documents into a meaningful aircraft structural integrity program.

3.2. Cover the entire life cycle of the aircraft to the time it fails to meet the criteria established in paragraph 2.2.

3.3. Include aircraft historical data, required service life, and economic life of all major structural components.

3.4. Incorporate appropriate ASIP events and milestones documented for the program. ASIP will be approved by the System Program Director (SPD).

- The aircraft ASIP manager will keep SAF/AQR, HQ USAF/ILM and the office of primary responsibility (OPR) for ASIP in each participating command informed on the initial plans for ASIP, as well as any changes to the program.

3.5. The aircraft ASIP manager will document changes to the program annually or more frequently, if necessary.

4. ASIP Management. Carry out the program based on the following guidelines:

4.1. For systems under development, carry out the program as an integral part of the total system engineering effort in the acquisition of the aircraft weapon system.

- The ASIP manager will translate the requirements of this instruction and the guidance in MIL-HDBK-1530 into a program for each aircraft and ensure the program is documented.
- Document the program no later than 30 days after the start of the Engineering and Manufacturing Development phase.
- Draft an initial plan for the program before exiting the Program Definition and Risk Reduction acquisition phase to ensure ASIP is considered early in the program.

4.2. For systems not developed by the Air Force, but which the Air Force intends to use, an assessment of the aircraft's structural integrity program shall be an integral part of the evaluation and selection process. SPD approval of the program must occur before the Air Force makes the production or buy decision.

4.3. For systems already in use, but which have not had full ASIP requirements accomplished and documented, the ASIP manager will determine what part of the total program is essential to establish the structural safety and remaining economic life of all major structural components.

4.4. For systems that are to be modified for a new mission, a revised program must be approved before fleet modification or regular operations begin under the new mission.

5. ASIP Assigned Responsibilities:

5.1. All Air Force commands and agencies will:

- Carry out the requirements of this instruction by issuing detailed documentation that specifies the command ASIP responsibilities and tasks.
- Keep implementing documents current.

5.2. SAF/AQR will:

- Ensure that an effective aircraft structural integrity program is established for each aircraft operated by the Air Force and provide guidance.
- Evaluate requests for deviation from the provisions of this instruction and grant approval, if appropriate.
- Use and consider ASIP information in force structure planning and in modification ranking and implementation.

5.3. AFMC will:

- Establish an OPR for command-wide policy and procedures for execution of the aircraft structural integrity program.
- Appoint an ASIP manager for each aircraft weapon system being acquired or used by the Air Force in support of the aircraft SPD. Under the Integrated Weapon System Management concept, the SPD has ultimate responsibility to develop, field, and sustain the aircraft weapon system throughout its life cycle. This responsibility includes the weapon system ASIP.
- Ensure each aircraft weapon system has an up-to-date ASIP.
- Implement ASIP requirements in a timely manner as an integral part of the total life cycle aircraft weapon system acquisition engineering process.

- Ensure that ASIP requirements are included in the procurement documentation for each aircraft weapon system acquisition, including aircraft weapon system structural modification programs.
- Develop and sustain data acquisition systems technology to monitor individual aircraft to ensure the operational effectiveness of ASIP.
- Install data acquisition systems in a sufficient number of aircraft to define the force usage spectra. Provide individual usage tracking capability on all aircraft. Install them when, reliability and maintainability requirements are satisfied, and an adequate scope of data parameters for the particular system has been identified.
- Maintain and revise MIL-HDBK-1530 and JSGS-87221B, as needed, to reflect technological advances or improvements in ASIP.
- Advise appropriate program offices, operating commands, and other management organizations of ASIP requirements.
- Develop advanced data reduction and analysis techniques for evaluating operational usage and fleet experience data.
- If the SPD's operational usage data processing concept requires new weapon system structural data collection programs or new computer application software programs, ensure they are supportable and compatible with each other.
- Sustain and enhance Aircraft Structural Integrity Management Information System (ASIMIS) capability as required by participating SPDs.
- Establish procedures for periodic review of the program of each Mission Design Series (MDS) aircraft to verify that:
 - Required data collection and analysis efforts are effective and operating efficiently.
 - Fleet ASIP inspection and corrective actions are valid and adequate to protect safety and durability of the airframe.
 - Fleet ASIP inspection and corrective actions are on schedule.
- All significant changes in the economic life of any major structural component are reported to SAF/AQR, HQ USAF/ILM, and each participating command.
- Develop structural design criteria and methods for evaluating and substantiating airframe safety and durability for future aircraft systems.

5.4. The aircraft ASIP Manager will:

- Establish the program as outlined in this instruction and coordinate with each participating command as required.
- Document and update the program, coordinate it with participating commands, obtain SPD approval, and keep SAF/AQR, HQ USAF/ILM, and the OPR for ASIP in each participating command informed on the initial plans for ASIP, as well as any changes to the program.
- Carry out the ASIP program.
- Advise SAF/AQR, HQ USAF/ILM, AFSC/SEF, and each participating command of the impact on structural integrity of the aircraft system when its mission changes.

- Establish a usage data processing capability and assess the reports. Begin corrective action where needed.
- Ensure personnel develop and sustain weapon system structural data collection programs and the required computer applications software programs. If the SPD's operational usage data processing concept is to use the ASIMIS capability, ensure the computer programs are compatible and supportable with ASIMIS.
- Document the justification and rationale if the SPD's operational usage data processing concept is not to use the ASIMIS capability.
- Establish and document the life cycle inspection and modification actions and schedules required to maintain the structural integrity of each aircraft system.
- Establish and document cost data elements required to determine the economic life of the aircraft system throughout its life cycle.

5.5. Operating/lead Commands will:

- Establish an OPR for managing this program command-wide.
- Provide data on system utilization, operational usage, and fleet experience to the aircraft ASIP manager.
- Advise the aircraft ASIP manager of contemplated changes in the operational usage that deviate from the original design.
- Install, operate, and maintain ASIP hardware as required.
- Provide aircraft modification funds per AFD 10-9, Lead Operating Command Weapon Systems Management, to upgrade obsolete and unreliable aircraft ASIP operational usage gathering hardware.
- Prepare and process operational usage data according to governing directives.
- Provide requirements for and monitor performance at unit levels to ensure that an effective data collection system is functioning in support of each program.
- Establish the required service life for all aircraft systems.
- Using commands will describe operational usage to the SPD. The SPD and the operating commands must agree upon recommended revisions to aircraft flight manuals to make known the impact these changes have on the structural integrity of the aircraft.

ARTHUR L. MONEY

Assistant Secretary of the Air Force for Acquisition